REMARKS

Claims 4, 7, 8 and 12 have been amended to depend from claim 1 or claim 2. Support is found in the originally filed claims.

New claims 13-17 correspond to claims 5, 6, 9, 10 and 11, respectively, but are subclaims of claim 2.

Entry of the amendments and review and reconsideration on the merits are requested.

Claims 1 and 4-11 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 3,780,007 to Stallings. Claims 2 and 3 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,824,726 to DeSimone et al.

Applicants traverse, and respectfully request the Examiner to reconsider for the following reasons.

A. Claim 1 Defines Novel Subject Matter:

The fluoropolymer producing method of claim 1 comprises continuously polymerizing a radical polymerizable monomer in a defined reaction-field. The defined reaction-field is in a supercriticality-expression state, under a pressure of not higher than 40 MPa, and at a temperature not higher than 100°C beyond the supercriticality-expression temperature of the defined reaction-field. The radical polymerizable monomer comprises a fluorine-containing ethylenic monomer. Furthermore, fluoropolymer has a weight average molecular weight [Mw] not lower than 150,000 on a polystyrene equivalent basis, and a ratio [Mw/Mn] of the weight

average molecular weight [Mw] to a number average molecular weight [Mn] on a polystyrene equivalent basis higher than 1 but not higher than 3.

The term "continuous polymerization" as used herein means continuously feeding the radical polymerizable monomer to the reaction field and continuously discharging the fluoropolymer thus formed (page 16, lines 27-30 of the specification).

On the other hand, the process of Stallings comprises polymerizing vinylidene fluoride monomer in a specific aqueous suspending medium while supplying sufficient water to the reaction mixture, as the polymerization progresses, to maintain a total reaction pressure which continually provides throughout the polymerization reaction a uniform dispersion of compressed monomer (See Stallings, claim 1).

That is, the process of Stallings comprises supplying water during polymerization, but does not comprise continuously feeding a radical polymerizable monomer to a reaction field. Furthermore, in each of the working examples of Stallings, the polymer product is not continuously discharged from the reaction field. Rather the polymer products are isolated after completion of polymerization (See Examples 1-12 of Stallings).

Therefore, the claimed process differs from Stallings, in that the process of Stallings does not disclose "continuous polymerization" as required by the present claims. For this reason, it is respectfully submitted that claim 1 defines novel subject matter and is not anticipated by Stallings. For the same reasons, claims 4-11 depending primarily or secondarily from claim 1 are also not anticipated by Stallings.

B. Claims 2 and 3 Define Novel Subject Matter:

The fluoropolymer producing method of claim 2 comprises continuously polymerizing a radical polymerizable monomer in a defined reaction-field in the presence of carbon dioxide. The defined reaction-field is in a supercriticality-expression state. The radical polymerizable monomer comprises a fluorine-containing ethylenic monomer, and carbon dioxide is present in an amount at most equimolar to the radical polymerizable monomer. Furthermore, the fluoropolymer has a Mw not lower than 150,000 on a polystyrene equivalent basis and a Mw/Mn ratio on a polystyrene equivalent basis that is higher than 1 but not higher than 3.

As discussed above, the term "continuous polymerization" as used herein means continuously discharging the fluoropolymer product from the reaction field while continuously adding the radical polymerizable monomer thereto.

On the other hand, the polymerization process of DeSimone et al includes (1) providing a reaction mixture comprising carbon dioxide and an aqueous phase, and containing a monomer and a polymerization mixture, and (2) polymerizing the monomer in the reaction mixture (DeSimone et al, col. 2, lines 17-23).

In this polymerization process, polymer products are separated from the reaction mixture when the polymerization is completed (DeSimone et al, col. 7, lines 4-5). The polymer products of the polymerization process are recovered not throughout the polymerization, but only after the polymerization is complete (DeSimone et al, EXAMPLES).

Therefore, the invention of claim 2 differs from the process of DeSimone et al, in that the process of DeSimone et al is not carried out continuously as required by claim 2. Therefore,

claim 2 defines novel subject matter and is not anticipated by DeSimone et al. For the same reasons, claim 3 depending from claim 2 is also not anticipated by DeSimone et al.

C. Patentability of Claims 1-11 over Stallings and DeSimone:

Both claims 1 and 2 limit polymerization to continuous polymerization in a supercriticality-expression state, and in which the product fluoropolymer has a Mw and Mw/Mn ratio as defined above.

Continuous polymerization in a supercriticality-expression state is important for obtaining a fluoropolymer having Mw and Mw/Mn values within the ranges respectively defined in claims 1 and 2 (See specification, page 13, lines 20-26).

> **For obtaining a fluoropolymer whose Mw and Mw/Mn values are within the respective ranges defined hereinabove by the fluoropolymer producing method of the present invention, it is at least necessary to carry out the polymerization of the radical polymerizable monomer(s) in the above-defined supercriticality-expression state in a continuous polymerization.**

On the other hand, neither the process of Stallings nor that of DeSimone et al are continuous polymerization processes, and therefore cannot provide polymer products meeting the Mw and Mw/Mn values defined in present claims 1 and 2.

For the above reasons, it is respectfully submitted that claims 1-14 are also patentable over each of Stallings and DeSimone et al. For the same reasons, it is respectfully submitted that claims 3 and 4-11 depending from claim 1 and claim 3 from claim 2 are also patentable over each of Stallings and DeSimone et al, and withdrawal of the foregoing rejections is respectfully requested.

D. Rejection over Stallings in view of Saito et al.:

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Stallings in view of U.S. Patent No. 6,716,942 to Saito et al.

Applicants traverse, and respectfully request the Examiner to reconsider for the following reasons.

The fluoropolymer producing method of the amended claim 12 comprises carrying out the polymerization of claim 1 or 2 in the presence of a non-ethylenic fluorocarbon. Moreover, claim 12 limits continuous polymerization to that in a supercriticality-expression state to provide a fluoropolymer having Mw and Mw/Mn values within the ranges respectively defined in claim 1 or 2.

On the other hand, Stallings does not teach or suggest continuous polymerization as required by present claims 1 and 2, and importantly does not contemplate, instruct or suggest that the subject continuous polymerization is important for obtaining a fluoropolymer product having the claimed Mw and Mw/Mn values.

The process of Saito et al comprises polymerizing specific radically polymerizable monomers in the presence of the radical polymerization initiator and an inactive fluorocarbon in which at least one of the components forming the reaction field is in a specified supercritical state (Saito et al, ABSTRACT). In the Examples of Saito et al, the products are collected after completion of the polymerization, while the monomer mixture is supplied throughout the polymerization. Thus, the process of Saito et al also does not constitute "continuous polymerization" requiring continuously discharging fluoropolymer product from the reaction

field. Thus, Saito et al does not cure the deficiencies of Stallings. For the same reasons, there is nothing in the cited prior art which would lead one of ordinary skill to employ continuous polymerization as required by the present claims by combining Stallings with Saito et al.

For the above reasons, it is respectfully submitted that claim 12 is patentable over Stallings in view of Saito et al, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Withdrawal of all rejections and allowance of claims 1-19 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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